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Farmers above the outlet: Irrigators and Canal Management in South Asia

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Abstract

In developing and studying farmers' participation on canal irrigation system in South Asia, both government programmes and social science research have concentrated their attention at the field level. Often the aim has been to induce farmer participation to distribute water, maintain watercourses, and resolve conflicts, all below the outlet. But in practice, much of irrigators' spontaneous collective action is found not below but above the outlet, in territory which is formally the domain of official irrigation management organisations. This spontaneous action is most common among tailenders, and takes forms such as fact-finding, local negotiation, lobbying, appropriating guarding, operating controls, construction, water capture and maintenance. Through these activities, groups seek to assure themselves a better water supply.

Managerially, the physical area above the outlet is often a no person's land or "jungle" in which groups actively compete when water is scarce unpredictable or untimely. Securing a better water supply is so important to irrigators that their spontaneous collective action can demonstrate impressive degrees of organisation, cohesion and leadership, and excludes partisan politics. An alternative to spontaneous action is formal joint management (FJM) by irrigation staff and farmers. This has been developed more in Sri Lanka than Pakistan or India. FJM can take the form of large open meetings of officials and farmers at project or subproject level, of channel or zonal committees, and of project-level committees. Farmers' participation and joint committees which have been evolved on the Minipe and Gal Oya projects in Sri Lanka offer a promising approach. For the future, questions include how major an opportunity FJM presents for improving canal irrigation performance in South Asia, and in what conditions and how it can and should be promoted.

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Definitions

In this paper, the following meanings are attributed to words and phrases :

formal joint management (FJM) — recurrent officially recognised management activities above the outlet involving both farmers and irrigation staff.

group — whether organised or not, the farmers in a hydrologically defined zone, normally the area below the outlet, with common interests.

improving performance — means enhancing productivity, equity and sustainability while minimising adverse effects.

main system — the canal system above the outlet, including diversions, works, reservoirs, main canals, branch canals, distributaries and minors.

outlet — the structure on canal irrigation system at which water control and management are usually, at least in theory, handed over from the irrigation staff to farmers.

The Professional Fixation : Below the Outlet

Most of the interest in farmers' participation on canal irrigation systems has been in activities at the field level, that is, below the outlet. Government-operated canal irrigation systems typically have a bureaucracy responsible for managing the main system, while farmers are responsible for water distribution below the outlet. The area below the outlet, known as the chak in North India, includes watercourses, field channels, farmers' fields and field-level drains. Main systems can range in size of command area from about 200 hectares to 2 million; chaks are usually between 5 and 100 hectares. Many attempts have been made, and continue to be made in South Asia, especially through the Command Area Development Programme in India, (Ali 1983, Pant 1984, Singh 1984), and

through various programmes in Sri Lanka, to promote and sustain farmers' groups or organisations at the chak level.

There are many reasons for this focus of attention. Most obviously, the field level is where management and its effects - erosion, flooding and so on - are most visible. It is conveniently beyond the main system - the physical area of responsibility of the established irrigation bureaucracies, and what happens there can be attributed to the ignorance or incompetence of farmers. It has also been acceptable for researchers and for Government programmes under the aegis of other departments, to operate below the outlet. In Pakistan, the research and development work of the Colorado State University Project over a period of some ten years was for institutional and political as well as professional reasons mandated to confine its work below the mogha (outlet). When transmission losses below the mogha were found to be much higher than believed by the Irrigation Department, attention focussed below the mogha even more. In both Pakistan and India, large-scale programmes have been mounted to improve performance on canal irrigation systems through what is termed 'on-farm development' (OFD) which means development of structures, watercourses and fields below the outlets. In India, the Command Area Development Programme (CADP) launched in 1975 was kept off the main systems by Irrigation Departments in most States, and forced to confine its attention to trying to improve performance through OFD below the outlets. The scale of operation was impressive, to cover 102 projects with an ultimate irrigation potential of about 18 million hectares by 1984. It is also striking, in both Pakistan and India, how departmental territorial thinking and behaviour confined research, and physical and managerial activities below the outlet, in the territorial margin were beyond the professional concern of the irrigation engineers who managed the main systems.

Sociologists and social anthropologists have reinforced this field-level focus. They like to study communities, and community-managed irrigation has a large literature which reflects their attention. They have contributed notably to policy and practice with 'communals', especially in the Philippines. Coward, who pioneered in this field, identified three main functions needed and performed by communities of irrigators on communals after the original construction: distribution of water, maintenance of structures, and conflict resolution. As attention was gradually transferred from commands to farmers' organisation below outlets on larger systems, these same three categories were applied, and observation and analysis concentrated on what happened below the outlet. From a practical point of view, the question was whether there were lessons from experience with communals which could be transferred to these larger canal systems. This fitted the concerns of OFD. Research and practice were mainly concerned with farmers' participation in design and construction for OFD, maintenance of watercourses and structures, distribution of water between farmers, and conflict resolution. The model in the minds of administrators, engineers, agriculturalists, and social science researchers alike had the outlet as the handover point. The irrigation bureaucracy was responsible for structures, decisions and actions above the outlet, and the farmers (and in India the CADA) for structures, decisions and actions below the outlet.

This division delayed perception of needs and opportunities. On the positive side, to be sure, CADA brought government staff into closer contact with farmers, and initiated a long learning process, described by Syed Hashim Ali (1981) in which Indian government staff and World Bank staff changed their priorities from land consolidation and land levelling to OFD and rotational distribution of water below the outlet. On the negative side, OFD, 'farmers participa-

tion', and water users association, by whatever name, provided a convenient means for shifting responsibility to farmers for those difficult tasks which irrigation bureaucracies were not able or willing to undertake. These coincided with the concerns which sociologists and social anthropologists transferred from their studies of communals, namely distribution of water, maintenance of watercourses, and conflict resolution. The practical question became how farmers' organisations could be set up on canal irrigation systems to perform these difficult functions which were both beyond the scope of irrigation bureaucracy and of interest to sociologists.

At the same time, in the latter 1970s and early 1980s, evidence accumulated that many of the problems in canal irrigation originated in the blind spot of main system management (Wade and Chambers 1980). It was increasingly recognised that a predictable, adequate and timely delivery of water through outlets was a precondition for farmers' participation in more equitable and productive distribution below the outlet and in maintenance of watercourses, and that it could also diminish conflict. Earlier the tendency had been to blame the victims and tell them to cure themselves; but more and more it was realised that one deep cause of the sickness was the failure to supply what the victims needed. Bad water management below the outlet, poor maintenance of watercourses, and conflict between farmers were not independent maladies which farmers inflicted on themselves, but rather symptoms of deficiencies in the main system and its management.

The Farmer's Frontier: Above the Outlet

Official concern for participation below the outlet focussed, on what it would be convenient for officials if farmers would do, and how they could be organised to do those things. Spontaneous activities below the outlet were known.

On canal irrigation in South India, for example, one widespread practice was the appointment by villagers of 'common irrigators' responsible for applying water to the fields. Maintenance of field channels was also undertaken. Conflicts were resolved in various manners, usually by respected villagers. It seemed a natural development for Government itself to encourage and initiate such organisations, and many attempts were made in India under the aegis of the CADP, but with only limited success.

The focus below the outlet diverted attention from the spontaneous activities of farmers above the outlet, described especially for South India by Robert Wade (1979, 1982). Taking South and Southeast Asia together, the evidence is scattered, and some of it is a few sentences here and there in papers devoted to other subjects. But taken together, it indicates that activity by farmers above the outlet is often varied, extensive and powerfully motivated.

The evidence shows seven activities:

- (i) Fact-finding
- (ii) local negotiation
- (iii) lobbying
- (iv) appropriating
- (v) guarding
- (vi) operation
- (vii) construction, capture and maintenance

Let us examine these in turn

(i) **fact-finding.** Fact finding is a continuous process. Farmers seek information on many subjects and from many sources. The most important subject is water availability, but others include Irrigation Department and other budget allocations, priorities for engineering and maintenance works, the comparative bribes being paid by other villagers or groups, and visits of ministers, local politicians and senior bureaucrats. The sources of information include gauge registers of the Irrigation Department; personal observations of flows; newspapers,

official letters, notices, and gazettes; and informal discussions for example when travelling on buses (Ramamurthy 1985).

The most common fact-finding above the outlet is visits to find out what water is available and where water is going. On large systems based on storage reservoirs, influential and well-educated farmers sometimes make long journeys to see for themselves how much water there is.

Farmers in the Cauvery delta in Tamil Nadu make annual visits to the Mettur dam, more than 200 kilometres away, to assess the season's water availability. On another large Indian canal system with an interstate water supply, farmer leaders went to the handover point between the States to find out from the engineers how much water they actually handed over and to crosscheck the statements of engineers in their own State. They also checked control structures which they had been told were not working (Ramamurthy 1982). More generally, farmers walk, bicycle, or travel by vehicle up their canal system to monitor the distribution of water, particularly to find out how much water is being taken by upstream farmers, villages, and other channels.

(ii) **local negotiation :** Negotiations with other irrigator groups or communities and with low level officials are widespread, though unlikely to be observed by visitors. They can take place in a formal, planned manner between villages or groups, and may take many hours, with each side putting forward its arguments many times until a solution partially acceptable to all is hammered out (Ramamurthy 1985). Or informal arrangements may be made among farmers for the sharing of a limited supply (see Cerdan and Svendsen 1981 for a Philippines example). They may go as a group to ask upstream to take less water so that more will flow downstream. Some negotiations lead to understandings which become principles or rules for water sharing, such as agreement that

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four days of water issue are for a downstream village and three days for an upstream one. When such arrangements are found it may be forgotten that there was a time when they were first negotiated and established. Negotiation and renegotiation can be intense activities in times of water shortage.

(iii) **lobbying.** Lobbying entails approaches to officials and politicians at a higher level. It can be political lobbying, involving the use of political pressure, or bribing in various forms.¹

Lobbying through political pressure can take the form of a mass delegation. In Sri Lanka, a group of 50 to 100 farmers are known to go en masse to see the officer in charge of a system to draw attention to a water shortage in their area (Jayewardene 1985). A village in South India may send a delegation to an engineer, a District administrator, a Member of Legislative Assembly, or to a State capital itself. Also for South India, Ramamurthy (1985) reports that lobbying has variants like

'Getting the help of politicians through representations and telegrams, boycotting elections, publishing articles in newspapers, blackmailing irrigation officials and making them answerable to their senior officers, creating a gadbad (a stir or commotion), haranguing, etc. Lobbying involves a great deal of time, cost and effort travelling to meet senior government officials in the irrigation and revenue departments or politicians or both wining and dining them on 'sle' visits.'

Lobbying through political pressure is probably almost universal, whereas bribing, though common, is probably less so. All the same, in places it is a deeply entrenched convention (Wade 1979, 1982a). Ramamurthy (1985) again states that farmers consider bribes to all levels of Irrigation Department staff to be necessary to achieve their ends. They are paid in various forms - cash, gold, grain, petrol or diesel consumer durables, construction materials,

alcoholic drinks and parties. Quite large sums of money raised for such purposes in a village may be handed over.

The concessions sought through political pressure and bribing can be very valuable to farmers. Almost all are concerned with improving the water supply, either indirectly through stopping or securing the transfer of an irrigation official (Pant 1985), or directly, for example, through releases of more water, or construction (such as a link channel or a larger outlet pipe) to assure a better supply, or rights to irrigate more paddy instead of drier crops, or water for a standing crop after the final date for water issues.

(iv) **appropriating.** Farmers appropriate water through physical action. One common form is the raid upstream, when a group of farmers or labourers go by foot, bicycle, tractor or jeep up a canal and physically remove checks, open or close gates, or install obstacles. A typical example is how during stress periods on the Minipe Scheme in Sri Lanka, desperate farmers whether individually or collectively block the main channel, distributary or field channels with timber or stones, and damage channel structures and cut bunds (Wickamasekera 1981: 34-5). Such acts may be carried out openly with a show of force. In South India, it is known for tail end villages to hire a jeep and to budget for its costs out of their common fund raised for such purposes, and then for farmers to patrol the main canal lowering sluice gates and threatening violence. Occasionally a whole lorry load of farmers will go, brandishing sticks in a demonstration of force (Ramamurthy 1985).

Appropriation through physical acts risks retaliation either from officials or from irrigators who will lose as a result. Farmer groups try to avoid action which would harm and upset their neighbours (Ramamurthy 1985). For example, for Sri Lanka, Jayewardene (1985) reports that

that if tailenders in a particular D-channel find that they do not receive an adequate supply of water because of over use by the headenders, they would still not try to control such outlets. Instead they will attempt to increase the inflow to the D-channel from the Main Canal. Though that act would also cause some problems to another group of farmers at a further end, it is likely that they are not aware of this.'

In a case in the Philippines, direct action to reduce supplies to other groups is only taken after careful assessment of how seriously the action would be taken. Svendsen, describing what actually happens on the Upper Pampanga River Integrated Irrigation System (UPRIIS) observes that every effort is made to avoid open conflict :

'When the purpose of a raid is to open an upstream check blocking the sublateral, it will usually be undertaken at night to minimize the chance of encountering the farmers who placed the check. If the check is being guarded even at night, the assumption is that the need for water there is serious and the check will usually be left alone. Unguarded checks, on the other hand, are assumed to be diverting unneeded water and will be opened.

When water is tight, farmers all along the sublateral will normally know the status of upstream checks and the length of time they have been in place. When a raid is made, it is often with the foreknowledge of minimal resistance to the action. In one interesting case, Water Management Technicians regularly act as go-betweens among groups of farmers. An upstream WMT would indicate to his downstream counterpart those upstream groups which were nearly finished irrigating and whose checks could probably be safely opened. This information is then passed on to downstream farmers of the second WMT. Farmers then send a delegation upstream to open the checks, allowing water to pass on downstream.' (1981 : 19)

(v) guarding Guarding upstream is widely

reported. The village of Vinayagapuram in North Arcot District, Tamil Nadu, posts night guards on the supply channel it maintains to prevent obstructions by the upstream village of Konaiyur (Chambers 1977 : 358-9). When the village of Trawan on the Sone Command in Bihar was suffering because the upstream village of Arap was cutting open the distributary, the Tarwan irrigators were organised to take turns keeping watch and as a result received more dependable and adequate water (Pant and Verma 1983 : 47). On some South Indian canals common irrigators appointed by village irrigation committees have guarding sluices as one of their functions (Wade 1979). Sometimes, if the threat of violence is great, farmers take part and as many as 8 or more will camp at a sluice particularly at night (Ramamurthy 1985). Wade reports that for one village with a relatively high degree of organisation, these common irrigators patrol the distributary and check that higher-up villages are not blocking the flow or keeping their sluice outlets too high. At times of considerable water scarcity a jeep or tractor may be hired to take large numbers of men — common irrigators and others who may join them to give a show of strength — higher up and keep them provisioned. In normal times less intense patrolling is carried out, together with posting three or four labourers paid to stand guard at a crucial fork a few miles upstream (Wade 1979 : 7). Common irrigators were found in 9 out of 24 villages, all 9 being tailenders (ibid 11-12). There can also be understandings about how far to go. One village which from its tailend position would be expected to guard sluices does not do so because that would be an open provocation to the immediately neighbouring village across whose land the supply channel flows. Wade reports that men of the downstream village often pass up and down the channel in coming to and from the village, keep a constant check on irrigation there at the same time, and 'not infrequently come to blows' (ibid 15). Nor is it only downstream villagers who guard upstream Ramamurthy has

noted (1982) that upstream villages also post guards to see that nobody from the lower reaches interferes.

(vi) operating One neglected aspect of farmers' activities above the outlet is the extent to which they actually operate and manage the system. This neglect is scarcely surprising, since such management is contrary to official theory and does not accord with common professional views of farmer ignorance and incompetence. Except in the form of 'deviant behaviour' such as damage to structures or placing obstacles in channels, farmers' operation of controls is easy to overlook because it is not physically conspicuous.

Farmers' abilities to operate and manage are demonstrated remarkably by what they show they can do on communal systems. Perhaps the best documented large communal system is Chhatris Mauja in Nepal (Pradhan 1983)². This 150-year old system has a 12 km channel irrigating nearly 3,000 hectares in originally 36 but now 54 villages, affecting some 25,000 people. It has a three-tier representative structure, and well developed rules and methods for maintenance, detection and punishment of infringements, and allocation and distribution of water. The entire project is run by farmers themselves. It is, moreover, only one of several examples in Nepal of irrigation projects of this size or larger which are managed by communities (ibid : 36). Smaller in scale, but still impressive, is the organisation of 18 villages under the Dusi-Mamandur tank in North Arcot District, Tamil Nadu which besides carrying out large-scale works, issues requests to the engineer in charge for water releases from the tank, and in effect manages much of the issue and distribution of water over a command area of 1645 hectares (Chambers 1977; Elumalai 1980). A further instance, much cited in the Indian literature, is the Mohini Irrigation Society on the Ukai-Kakrapur irrigation system in Gujarat (Singh 1981:49; Sinha 1983; Chowdhary and Kalra 1983; Singh 1984) reported to have a

culturable command area of 420 ha, with a minor canal managed by the cooperative society.

Intriguing findings (Svendsen 1981) near the tail of the 100,000 hectare UPRIIS irrigation system in the Philippines raise the question of how widespread de facto operation by farmers may be above the outlet, whatever the official theory. The original intention on UPRIIS was that water would be issued to 50 ha rotational areas (RAs) and that the official responsibility of the Water Management Technologist would end just below the turnout to the RA at which point farmer management would take over. In practice, the actual handover of responsibility took place much higher up the system than in the theoretical model. RA turnout gates were meant to be operated by irrigation staff. In fact, where the gates were operable, farmers affected by them normally had their own wrenches, allowing them to open and close the gate at will. In almost all cases, control of water through the RA turnouts was in farmer hands. Svendsen continues the next level of control in the system is exercised by checking in sublaterals which is often necessary to cause turnouts to flow. In the study areas, these checks too were often, though not always, under farmer control. Frequently, the first significant control by irrigation system personnel is encountered at the structures joining sublaterals to their parent laterals. Functional farmer control thus typically extends the length of the sublateral, over blocks several hundred hectares in size' (ibid. 18)

The control is not, however, exercised through any formal organisation, but through loosely structured and recurring activities, the upstream raid among them.

A similar pattern was found on Gal Oya in 1980, before the rehabilitation project started. Control of distributary channel gates was effectively in farmer's hands. As soon as the irrigation department staff member (Jala Palaka)

had bicycled off after closing a gate, farmers would go out with their home-made keys and change the setting at will (Uphoff 1985a). The Irrigation Department appeared to have abandoned control of many parts of the systems.

Murray-Rust came to a similar conclusion after a very detailed study of Gal Oya:

Farmers have established informal control over water at significantly higher levels in the system than formally designated. It is highly improbable that the Irrigation Department could ever regain control over water down to the level of individual field channels, both because they are unlikely to have sufficient resources and because farmers may opt for different patterns of water distribution than those proposed by the Department.

Farmer control above the outlet is evidently widespread. That farmers are capable of operating a canal irrigation system covering thousands of hectares is shown by the Chhatis Mauja and Dusi-Mamandur cases, both of which require considerable organisation. (This is not, however, to say that they necessarily manage the systems either better or worse than a separate bureaucracy) That farmers in practice operate controls higher than the outlet is shown by the UPRIS and Gal Oya cases, and suggested by reports of 'farmer interference' on main systems elsewhere. On Malaprabha in Karnataka Vedulla found so much crossbund-ing and blocking of pipes by farmers that he could only measure unimpeded actual flows, in order to compare them with designed flows, when water was not being used by farmers (cited in Rao and Sundar 1925 : 57). It was noted many times that the minors and outlets were operated by the interested farmers with or without the knowledge of the patkari (irrigation official). Ramamurty (1985) notes that 'farmers are continuously operating and controlling the main canal system and distri-

butaries' but that this often has to be done clandestinely. And perhaps this very secrecy has concealed from observers and analysts that de facto control by farmers of the lower parts of main systems is the rule rather than the exception.

(vii) construction, capture and maintenance. Especially where they have no water, or water is scarce, farmers can be found going to great lengths in construction and maintenance work in order to secure it.

Once-for-all construction can be undertaken to capture, augment or assure a group's water supply. This is most conspicuous and most observed not above but below and at the outlet. Niranjan Pant (1985) visited a medium irrigation project in Rajasthan where the main canal and minors had been constructed and lined, but the farmers left to construct water-courses and field channels. He found farmers engaged in deep rock cutting, including blasting, high filling up to 0.75 metres, and much excavation work, in one case over 2 kms long. Another common intervention by farmers is the installation of 'unofficial' outlets on a minor or distributary. On UPRIS, turnouts from the main system had not infrequently been sited and constructed by farmer (Svendsen 1981). On North Indian and Pakistan canal irrigation farmers sometimes change the size of the outlet pipe so that the whole group gets more water.

Similarly, though much less observed, farmers have shown themselves able to undertake substantial once-for-all works above outlets in order to capture water supplies from main systems. On one South Indian canal, farmers camped and dug a 300-foot channel 70 feet wide to a depth of 26 to 30 feet in order to obtain a better water supply. They have been found undertaking works on main systems including digging new channels, deepening, widening or lining channels, changing alignments, constructing diversion structures, rein-

forcing embankments, replacing or removing pipes or sluice gates that obstruct flows, devising ways to reuse waste water flows through drains and check dams, digging wells to collect seepage flows, and so on (Ramamurthy 1982, 1985). On the Wagon Project in Rajasthan in the mid-1980s, farmers were trying to use funds from a large temple visited by lakhs of devotees each year to build an additional minor canal (Lowdermilk 1985). In such works, the technical advice of engineers may be enlisted. On Gal Oya in Sri Lanka, when the desilting of a distributary channel during rehabilitation decreased water flow into one of the field channels, the farmers' organisation obtained permission and technical advice from the Irrigation Department officer in charge of the area and built a stone check structure in the distributary channel with shramadana (voluntary communal) labour (Abeyratne et al 1984:12). On the Pochampad Project in Andhra Pradesh, in several cases farmers, under the technical supervision of the engineers, deepened channels so that water could reach some outlet commands. Had the farmers not done so, delays in official procedures could have deprived them of water for several irrigation seasons (Singh 1984:15).

Farmers also combine for recurrent activities to capture and maintain their supplies. Each year the farmers under Dusi-Mamandur mobilise labour and organise lorries to carry them 15 to 20 km to the offtake of the Rajakkal channel which supplies their tank. A temporary barrier is then made in the Palar river to divert water into the channel. One reason why farmers undertake this work is because it requires timeliness and speed of a sort it is difficult for the PWD to muster (Chambers 1977; Elumalai 1980).

Another probably quite widespread phenomenon is the seasonal construction of brushwood weirs by "encroachers" to capture drainage return flows from headreaches, as found on Kaudulla in Sri Lanka. Farmers also undertake

emergency repairs: when there was too much water in a distributary on Gal Oya in Sri Lanka and the channel was about to breach, farmers built it up themselves (Uphoff 1984). Desilting is another activity carried out by farmers above the outlet. On Minipipe in Sri Lanka, shramdana for desilting the main channel was organised by a Buddhist voluntary agency (Wickramasekera 1981:63) and on Chhatris Mauja in Nepal desilting the main canal is considered to be the most important event in the management of the system (Pradhan 1983:231). In Andhra Pradesh (Ramamurthy 1984) and Rajasthan (Pant 1985) farmers clean main system channels which lie upstream of them.

Officials often complain that farmers are unwilling to do maintenance work above the outlet. There are several reasons for this: maintenance can be costly and tedious; the boundary of responsibility between farmers and government sometimes shifts and may not be clearly established, so that it is sensible for farmers to wait and see if government will do the work; farmers may fear that if they do the work maintenance funds allocated for their channels will be diverted elsewhere (Jayewardene 1985); it is difficult for farmers to get together for collective activities anyway; and most important, they may only see a collective interest in doing maintenance work if their water supply will benefit substantially—rarely the case for top-enders on distributaries and minors with moderately adequate supplies. The instances cited above show that where farmers do see a clear gain in their water supply, they can be willing to put in their labour; but the incentives do have to be obvious and strong.

Spontaneous Action Analysed

To analyse scattered data comparatively is hazardous. What follows combines comparison, inference and guesswork. Rather than presenting conclusions, it seeks to identify working hypotheses and questions for further investigation. The aim is to understand why

irrigators do what they do above the outlet so that later we can speculate on how these interests and drives could help improve system performance.

The analysis falls under five heads :

- (i) irrigators' first priority
- (ii) the jungle
- (iii) group boundaries, cohesion and leadership
- (iv) too important for partisan politics
- (v) preconditions for action

(i) irrigators' first priority

All these activities above the outlet - fact-finding, local negotiation, lobbying, appropriating, guarding, operating, construction, capture and maintenance - can and do occur spontaneously, that is, without being sponsored or organised by government. In different places and conditions and at different times farmers are found getting together and doing them. Since all involve costs - in time, money, labour, organisation or even physical risk - farmers must care a great deal about a successful outcome. If we can see what these activities have in common, we may have a clue to the springs of spontaneous farmer action above the outlet.

It is obvious and also remarkable that all seven activities have the same objective : to secure a better water supply for the group. A better water supply may here be taken to be one which is among other things more adequate, timely and predictable in the group's terms.

Further support for this conclusion comes from two sources.

The first is evidence that spontaneous farmer organisation is found where water is both scarce and unreliable, but where group action stands a good chance of improving it. This is usually towards the tailends of systems (Wade 1979; Ramamurthy 1982).³ Spontaneous farmer's organisations have not been reported in headreaches where water is usually more

adequate, timely and predictable. Nor in the sense of groups of farmers with distinct differentiated roles, are they found in one case where water supply, though scarce, is reliable. This is the Northwest Indian warabandi as it is found in Punjab and Haryana where rigid self-policing rules for rationing scarcity between farmers are well established and jealously monitored by farmers themselves individually. The whole system is now so well developed and accepted, it seems, that group action to secure more water would have limited scope and might be dangerous.

The second evidence of the priority of securing a group's water supply is a revealing sequence of events in a tailend location on a South Indian canal (Wade 1982b). The water supply had earlier been adequate because of slow take-up of irrigation higher up the system. It then became meagre and unreliable for five or six years. Irrigation became expensive for farmers because each irrigation took longer, and labour had to be present to ensure that other farmers did not take water during the wetting period. As the water supply fell, officials also demanded higher bribes for providing the supply. This became so expensive and difficult that small farmers gave up irrigating altogether. Then the farmers of an area of 600 acres under three outlets got together to try to improve their water supply by concerted action. They contributed to a common fund which they used for two purposes in the first season. One was to employ labourers to go higher up the distributary to guard and ensure that their water supply was not stolen. The other was to bribe officials to release more water. At this stage they did not concern themselves with distributing the water below the outlets : the first task was to capture and assure it. When the results from the first season were encouraging, they contributed more money and employed more labourers - a total of 34 - and paid them more to resist inducements from upstream irrigators. The plan was for 10 of these labourers to guard upstream, and 24 to distribute the water below the outlets. But when

their upstream water supply was threatened the farmers sent 28 labourers upstream, and abandoned the idea that labourers would apply the water to the fields. water capture above the outlet took priority over water distribution and application below it :

(ii) the jungle

The canal system immediately above the outlet is quite often a no person's land, a jungle. There are several reasons for this. Irrigation Departments responsible for main systems have nominal control all the way down to the outlets, but they do not always have the staff to manage. One response to water management problems is to extend departmental control even further: the policy decision in India to extend main system control down to 5 to 8 ha chaks instead of 40 ha chaks is a case in point. However, low level staff may be too few, too immobile, or too poorly provided with incentives, to exercise the degree of control required, leaving an unadministered gap. Moreover, especially where water is short they may lay themselves open to abuse, threats or violence if they enforce regulations by opening and closing outlets or controls on minors or even distributaries. They may also be induced by farmer groups through gifts to turn a blind eye and allow those with a more intense interest in what happens to the water to appropriate or distribute the water themselves. For a quiet and safe life and modest profit, it can make sense for them to refrain from control.

To the extent that they withdraw, or fail to occupy the no person's land, they leave it to farmers. Competition for the water is defined as a group activity because of the physical nature of the channels and outlets. As in so many realms of human conduct, the play of interest involves force, threat and fear of force, inducement, negotiation, ideas of equity; and legitimation by precedent. As farmers are to each other below the outlets, so groups of farmers are to each other above. The geographical advantage of

headenders is often reflected in conventions which give them priority, but intense resentment by tailenders can provoke confrontations which modify these. What starts as a jungle on a new irrigation system is partially regulated by precedent and understanding, with an underlying threat of collective forceful action by others if any group goes too far. And just as an ample supply of water to an outlet reduces competition and conflict between farmers, so an ample supply to a minor or distributary reduces competition and conflicts between groups. In well-supplied headreaches, and elsewhere in good years, the jungle is peaceful and groups quiescent. In poorly supplied tailends, and in bad years, groups become active and predatory, trying through raids guarding, lobbying and negotiation to serve their own interests.

(iii) group boundaries, cohesion and leadership

Spontaneous groups may be hydrologically-based, comprising the farmers below one outlet, or more outlets, or on one minor; or socio-politically-based—the village or community. Most of the organisations described by Wade in South India were village-based, representing collective interests which could cover several outlets. The organisations observed by Ramachandram (1984) on the Periyar-Vaigai system in Tamil Nadu were also village-based. However, one of Wade's examples (1982b) entailed collective action by farmers under three outlets and coming from two different villages. Or an even larger geographical area may be represented, as with the pressure group described by Ramamurthy which set out to establish facts, publish a newsletter, and secure a better deal for many villages at the tailend of a large system.

Many variables might be expected to influence the composition and cohesion of a spontaneous group—a perceived collective deprivation interest or opportunity; social homogeneity leadership; traditions of collective action; size

of group; and other non-irrigation reasons for collective action (such as regulation of the grazing of village lands, as noted by Wade 1979). Collective action may fail: social divisions may be stronger than the pull of common interests, as Merrey found in Gondalpur village in the Punjab (Pakistan) where factions and *izzat* - a non-zero sum concept of honour, status and 'face' - prevented cooperation and led to deliberate sabotage of rehabilitation and maintenance, even though the saboteur lost as a result (Merrey n.d., 1983, and 1985). On the other hand the force of common interests in securing water is supported by Wade's (1982b) three outlet but two village example, which demonstrated successful organisation for 600 acres. This organisation included people from two villages, one of which surprisingly had

'two strong factions, the enmity between whose leaders has been strong enough to prevent several kinds of village-based concerted action which are quite commonly found in villages in this area'.

It was agreed that any water disputes in the village involving these two factions would be taken for arbitration to the leader of the other village.

The choice of group leaders and emissaries appears to be pragmatic. Local influentials may be expected and even required to represent collective interests in the outside world. In Tarwan village in the Sone Command in Bihar, in August 1981 the executive committee had a meeting 'which decided that the president would contact higher irrigation officials for the maintenance of expected water in the distributory' (Pant and Verma 1983:47). There can be here an element of *noblesse oblige*. The village irrigation committee, or *peddamanshulu*, found on some South Indian systems, is comprised of respected gentlemen in whom the village can have confidence: being on the *peddamaushulu* is 'a difficult and thankless task, that they would sometimes rather not

perform' (Ramamurthy 1982). In one village, the same man took the lead role in all representations outside the village. He was not a large landlord, but a middle-sized working farmer who happened to be unusually articulate (Wade 1979 : 7). But the time involved is a cost which small farmers may not be willing to bear, and they may welcome leadership by the dominant class. They may not initiate an organisation

'because they do not have the time, money, extra-local connections, transportation facilities or status characteristics-dress, deportment, language etc. Besides the fact that small farmers social rate of discount is rooted in the subsistence present, large farmers are often expected to provide services as liaison agents with the external world, just as they are expected to provide in times of emergency or at communal festival feasts. Small farmers may often benefit from larger farmers water mobilisation endeavours as 'free riders' as long as such endeavours enable them to gain more material advantage in the process'. (Ramamurthy 1984 : 16-17 her emphasis.)

However, they may not be entirely 'free riders' in that those who act on behalf of the group may expect other services or loyalty in return.

Comparing Merrey's Gondalpur and Wade's South Indian case is instructive. No doubt there were cultural differences between the two areas which explain something. Beyond these, in Gondalpur the focus of conflict was below the outlet, internal to the village and the watercourse, and the activity of rehabilitation and maintenance involved direct conflicts of interest. In the South Indian case there was an external focus, above the outlet and a common cause in which all could unite. In Gondalpur some were liable to lose; in the South Indian case, all stood to gain. Sometimes then, it can be easier for farmers to combine for activities above the outlet, where they are not meant to be, than for activities below the outlet, where government so often

seeks their participation. In the South Indian case, common interests in securing a better water supply were strong enough to transcend simultaneously both inter-village boundaries and intra-village factions. Indeed, 'a better water supply reduces internal competition and conflict. Farmers' activities above the outlet externalise internal problems. Some of the more active groups above the outlet may even be those with stronger internal tensions.

(iv) too important for partisan politics

A striking feature of farmers' activities above the outlet is their desire to keep them separate from partisan politics. This comes over strongly in evidence from India, Nepal and Sri Lanka.

In India, the pressure group studied by Ramamurthy was deliberately distanced from politics. Its leaders included persons prominent in three different political parties. The President of the organisation expressed himself not disappointed at delay in the publication of the organisation's news sheet because it was the time of an election and if it were published then 'there is a chance that farmers think it is biased by partisan politics; since (the organisation) is essentially a non-party biased organisation it is important that farmers get this message, especially in the first issue'. Another informant gave the blurring of aims with partisan politics as a reason for the failure of earlier similar organisations (Ramamurthy 1982).

In Nepal, on the Chhatis Mauja communal system, local politics and irrigation management are kept separate, with priority to irrigation management. The central committee can mobilize political force within the command area, but the committee members do not actively participate in a political election campaign or in political activities. The elected Panchayat Pradhan, associated with partisan politics, is usually deliberately not made chairman of the irrigation association (Pradhan 1984 : 237).

In Sri Lanka, a project committee was elected on the Minipe scheme 'with a high degree of enthusiasm'. 'Partisan politics did not play any major role in the elections with representatives being selected from both the UNP and SLFP groups' (Wickramasekera 1981 : 67). Again, on Gal Oya, a national system of elected or appointed farmer leaders called 'Yaya Palaka' was not effective in mobilising farmer participation in operation and maintenance, one reason being that they were generally associated with political parties and political interests (Abeyratne et al 1984:16-17). Close observers of farmers' activities on Gal Oya were impressed by their determination to keep their organisations from becoming politicized. The District Minister, recognising the value of the non-political farmer organisations, avoided personal involvement with them. For a few days during the 1983 national election campaign, spokesmen for both major parties in the district made the Gal Oya farmer organisation programme an issue but 'apparently behind-the-scenes advice from farmers led both to drop the issue and the programme did not become embroiled in partisan politics as was to be feared'. In the words of one of the previously most prominent and partisan farmers in the area, 'politics is cancer for farmer organisation' (ibid : 34).

(v) preconditions for action

We can now postulate preconditions for spontaneous collective activities above the outlet on bureaucratically managed systems. These can be divided into those that are necessary, and those that are predisposing.

These conditions appear necessary :

- the group must have a common hydrological interest
- water must have high value to the group

—the group's water supply must be unsatisfactory (inadequate, unpredictable, untimely, inconvenient (e.g. at night) etc.)

—farmers must perceive a reasonable chance to improve it

Among many predisposing but not essential conditions, some of the more important are :

—poor communications from management to farmers, so that farmers are uncertain what they can expect to receive

—absence of a reliable operational plan for water distribution on the main system

—lack of effective sanctions by officials or neighbours against raiding, poaching and other informal forms of appropriation

—officials and politicians susceptible to influence and with power to change water distribution

—respected and capable leadership of the group.
(to be concluded)

A scientist, an engineer and a lawyer were asked the question : "What is two plus two ?"

The scientist immediately answered : "Two plus two equals four".

The engineer shook his head and retorted : "Approximately plus approximately two equal approximately four".

Both then turned to the lawyer and demanded : What is your answer ? What is two plus two ?".

The lawyer stared back and calmly replied : "What would you like it to be ?.